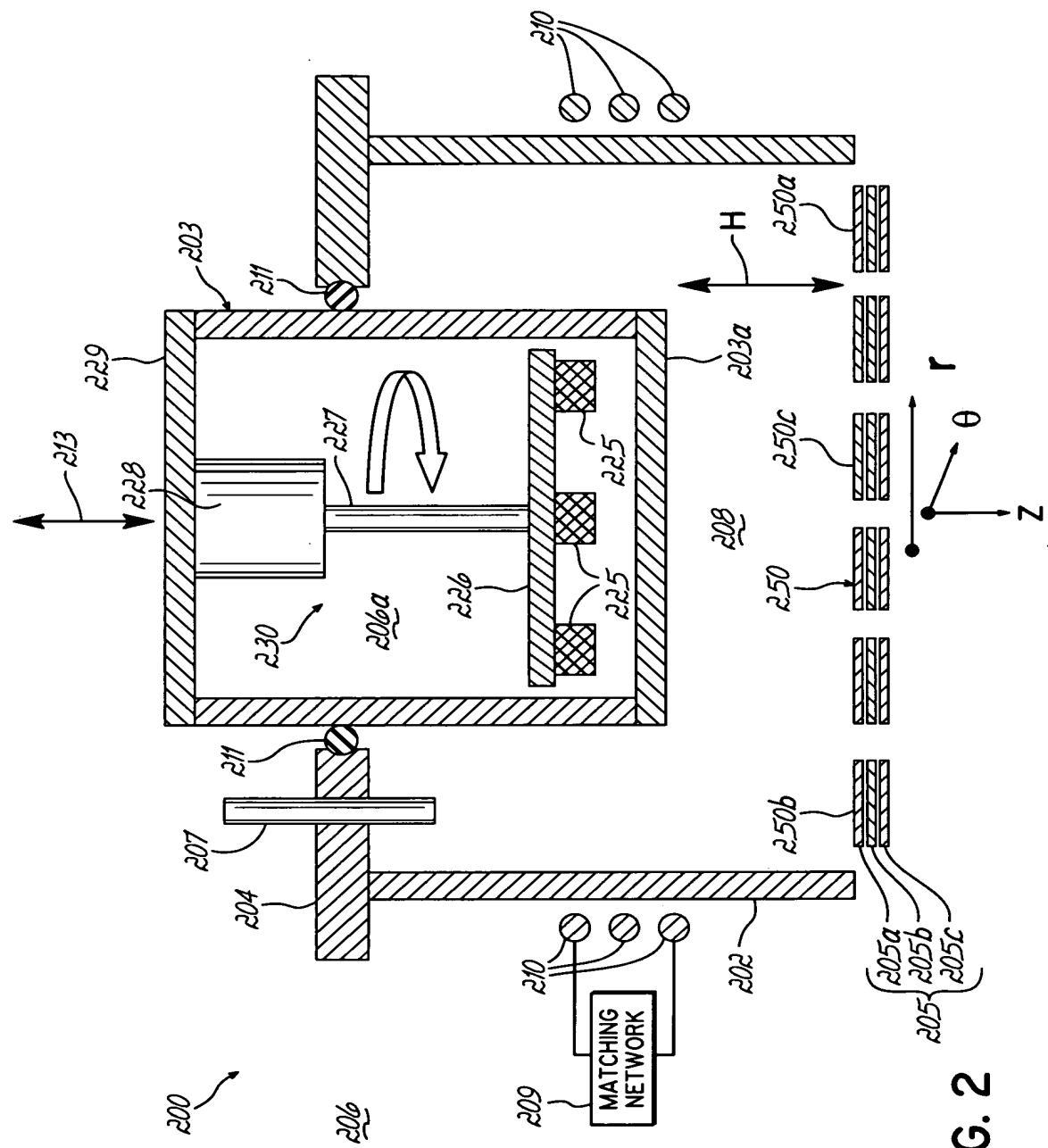


FIG. 1



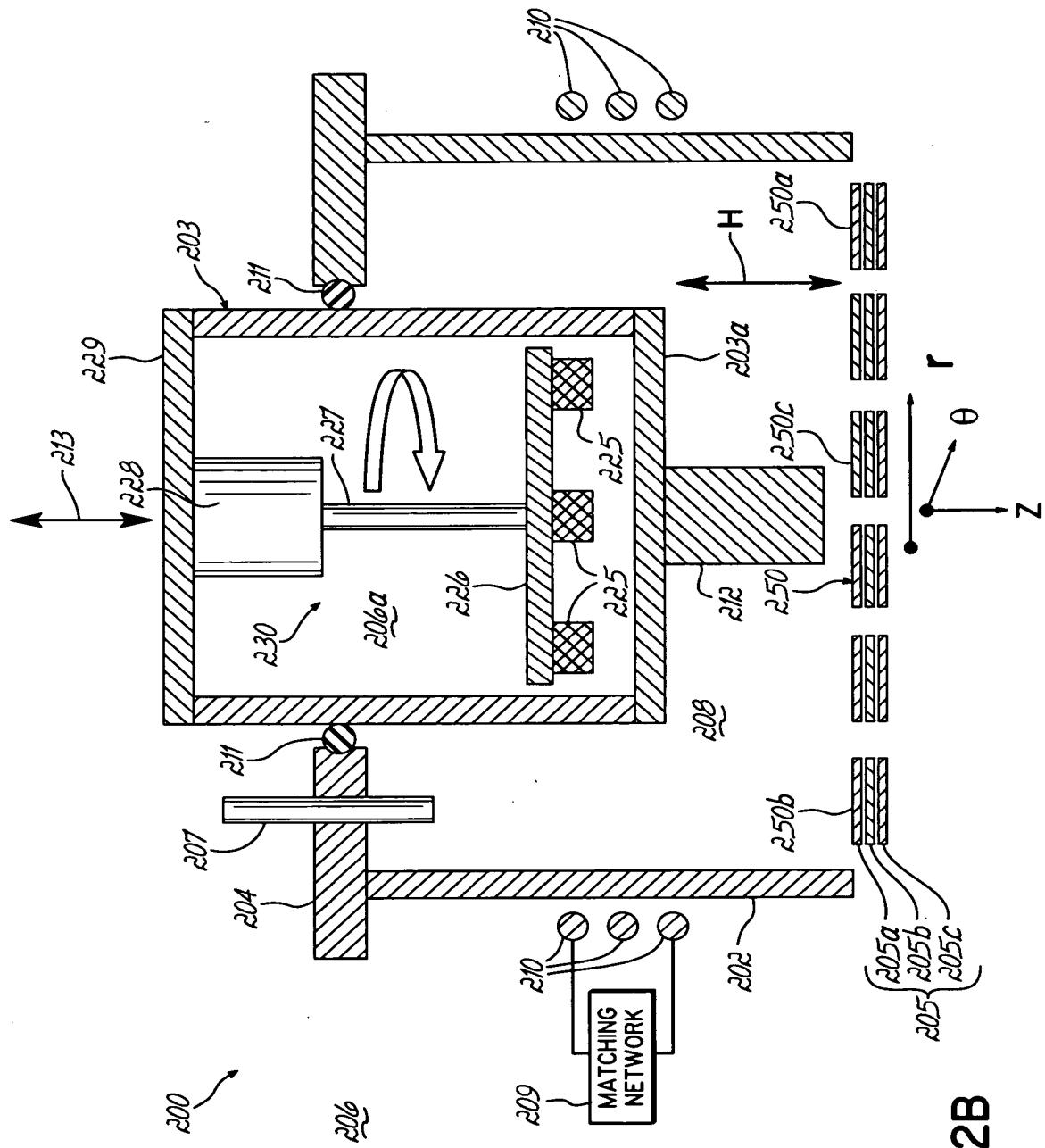
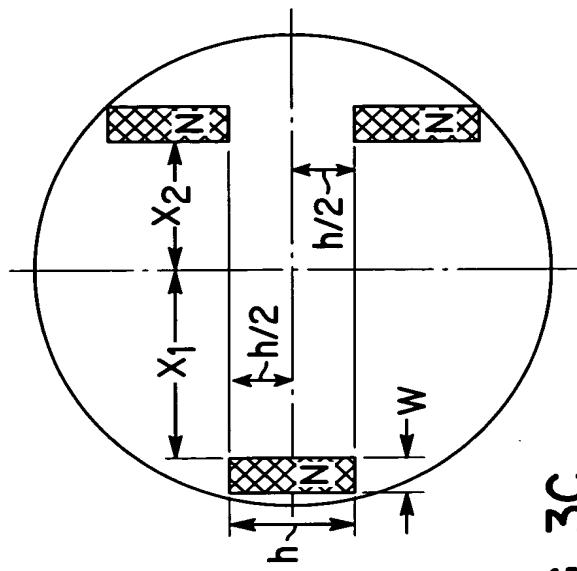
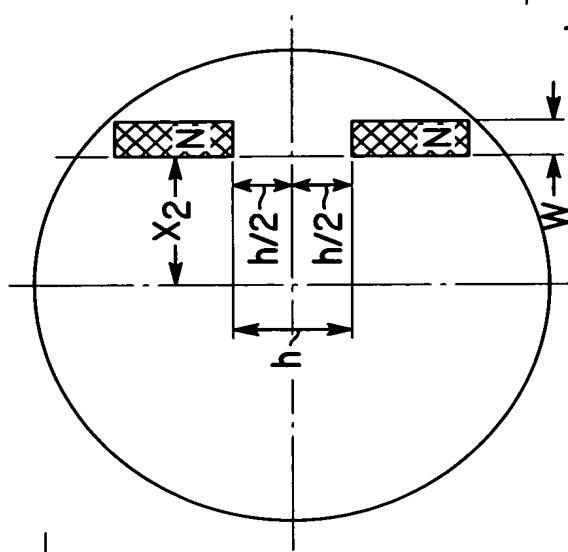
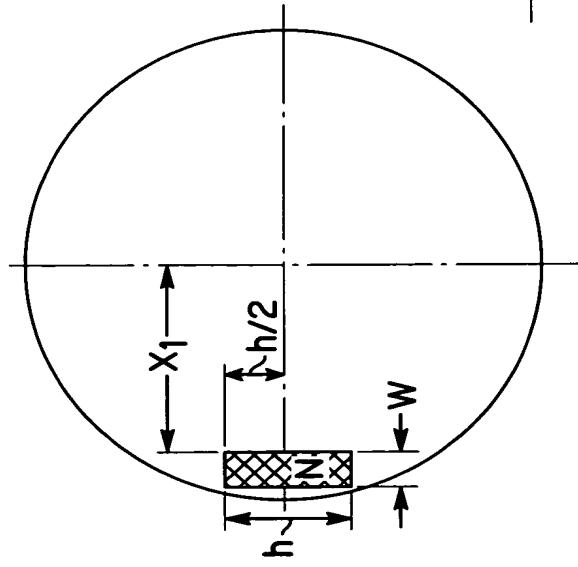


FIG. 2B



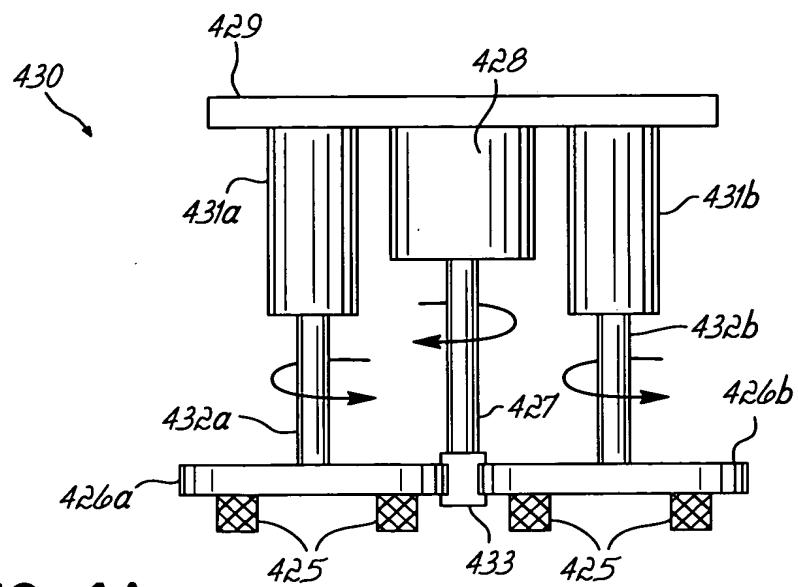


FIG. 4A

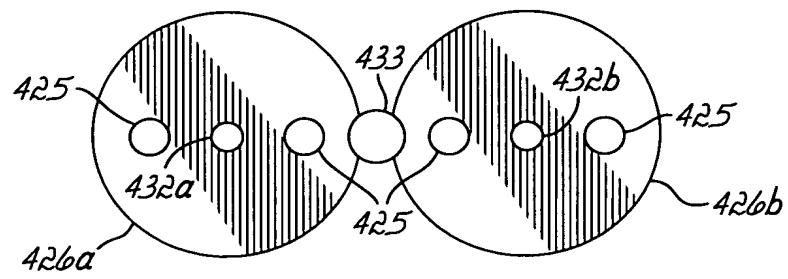


FIG. 4B

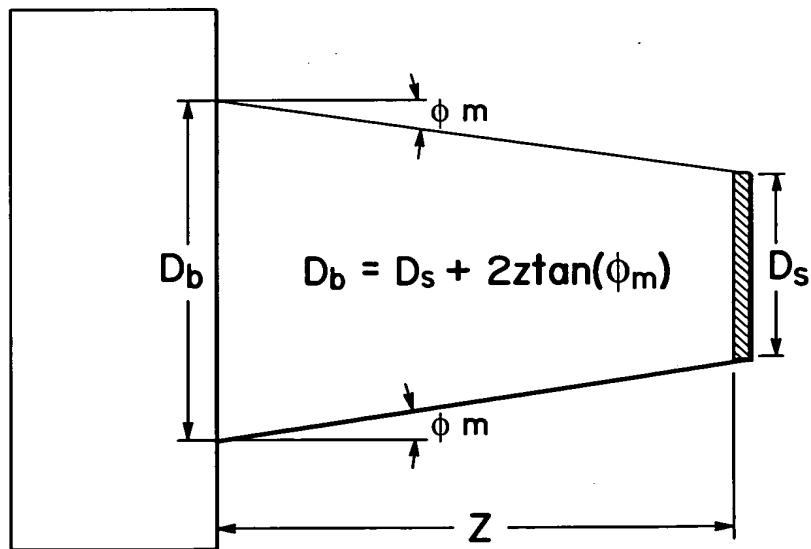


FIG. 11

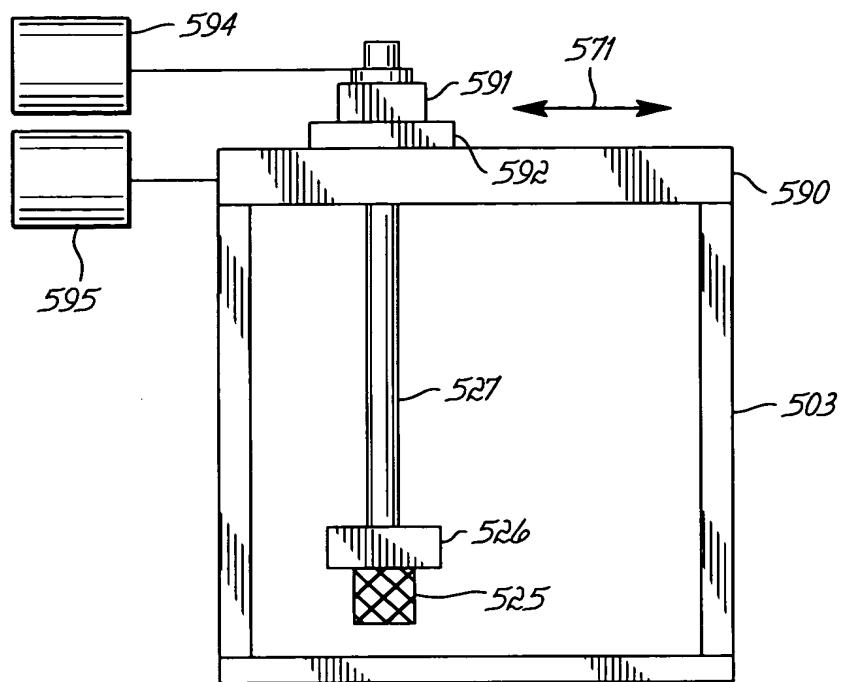


FIG. 5A

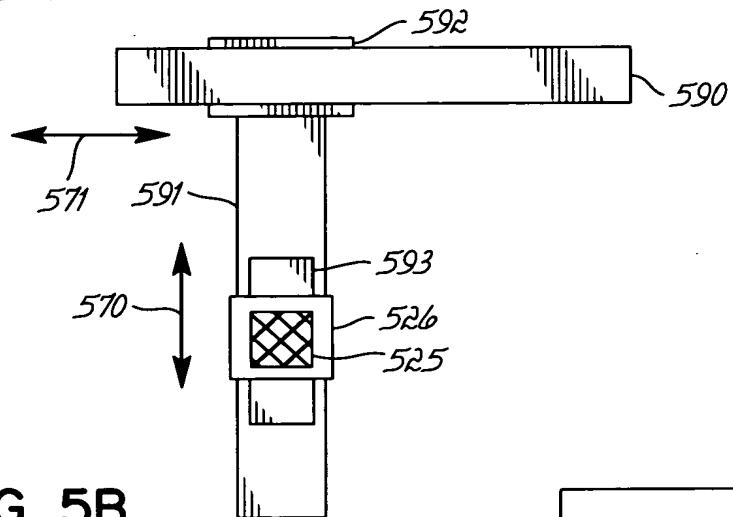


FIG. 5B

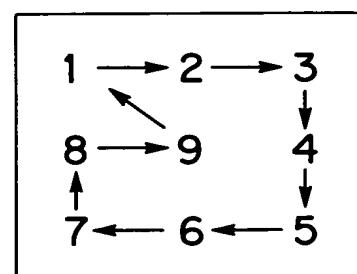


FIG. 5C

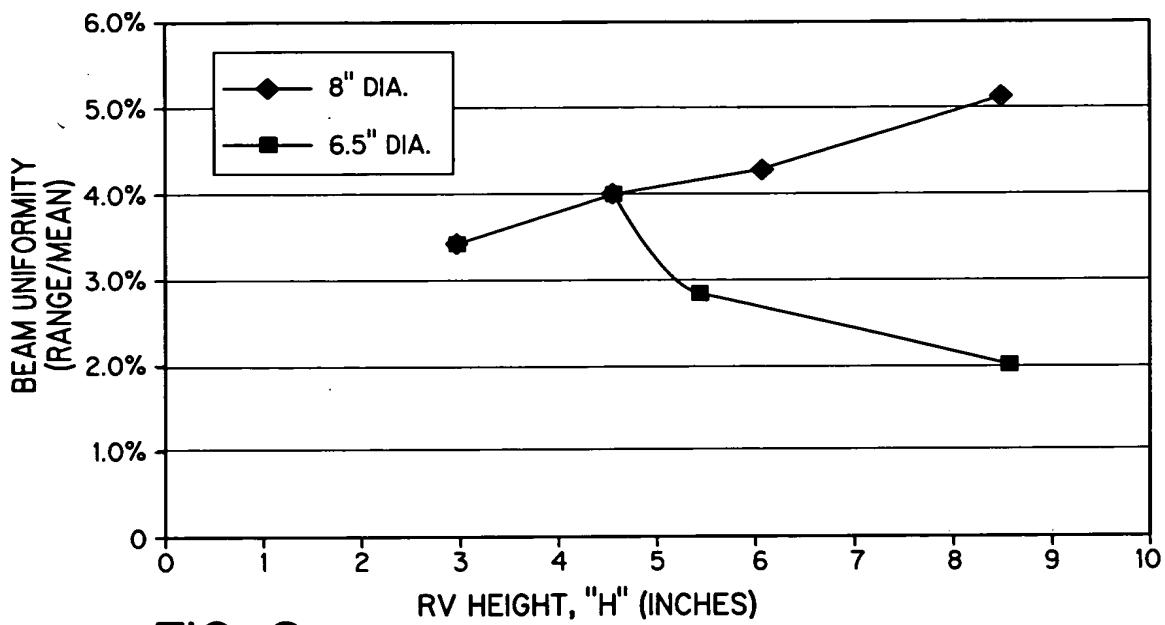


FIG. 6

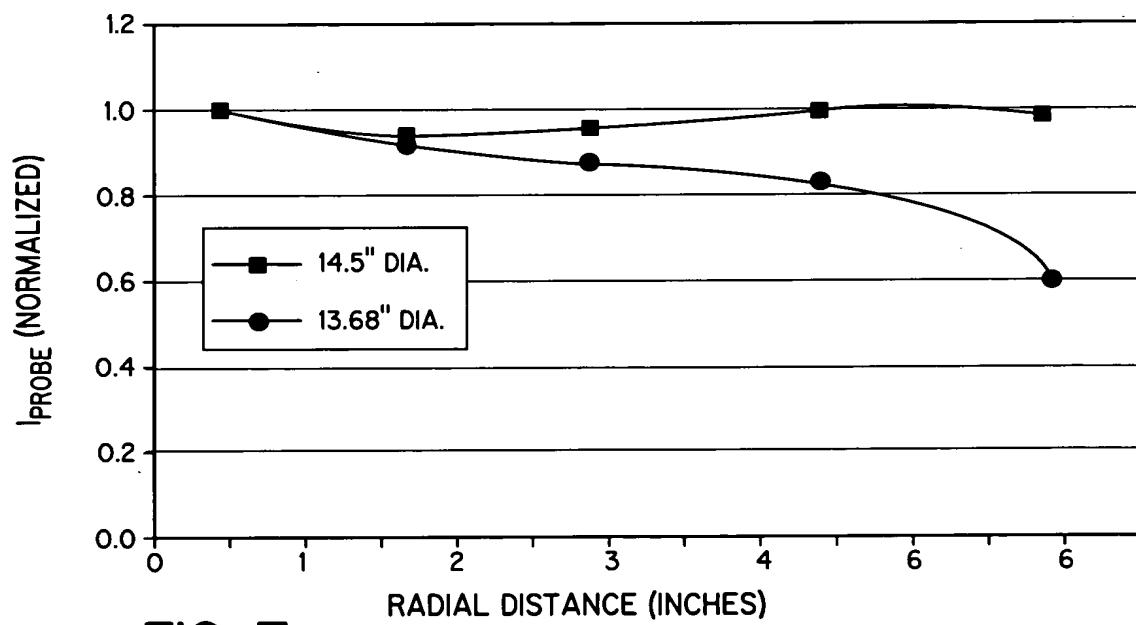


FIG. 7

13.8" plasma diameter ion source (Prior Art)

- Average optimized within-wafer rotated uniformity: **3% 3σ/mean**
- Average within-wafer static uniformity: **8 - 16% 3σ/mean**

13.8" plasma diameter ion source with modified ion optics (Prior Art)

- Average optimized within-wafer rotated uniformity: **2 - 3% 3σ/mean**
- Average within-wafer static uniformity: **6 - 12% 3σ/mean**

14.5" Ion source with Low Divergence Grid Ass'y, RV Extender, and Micromasks

- Average optimized within-wafer rotated uniformity: **1 - 3% 3σ/mean**
- Average within wafer-static uniformity: **4% 3σ/mean**

14.5" Ion source with Low Divergence Grid Ass'y and Rotating Magnet Array

- Average optimized within-wafer rotated uniformity: **1 - 1.8% 3σ/mean**
- Average within wafer-static uniformity: **3% 3σ/mean**

FIG. 8

Source Type	Center Divergence Angle	Change in Divergence from center to 3"	Steering Angle for 6" wafer
350 mm Production Source (PRIOR ART)	7.7	0.8	1.5
350 mm Production Source with Modified Ion Optics (PRIOR ART)	5.3	0.5	1
450 mm Source with Low Divergence Grid Ass'y, RV extender and grid micromasks	2.4	0.5	0.5
450 mm Source with Low Divergence Grid Ass'y and Rotating Magnet Array	2.6	0.6	0.5

FIG. 9

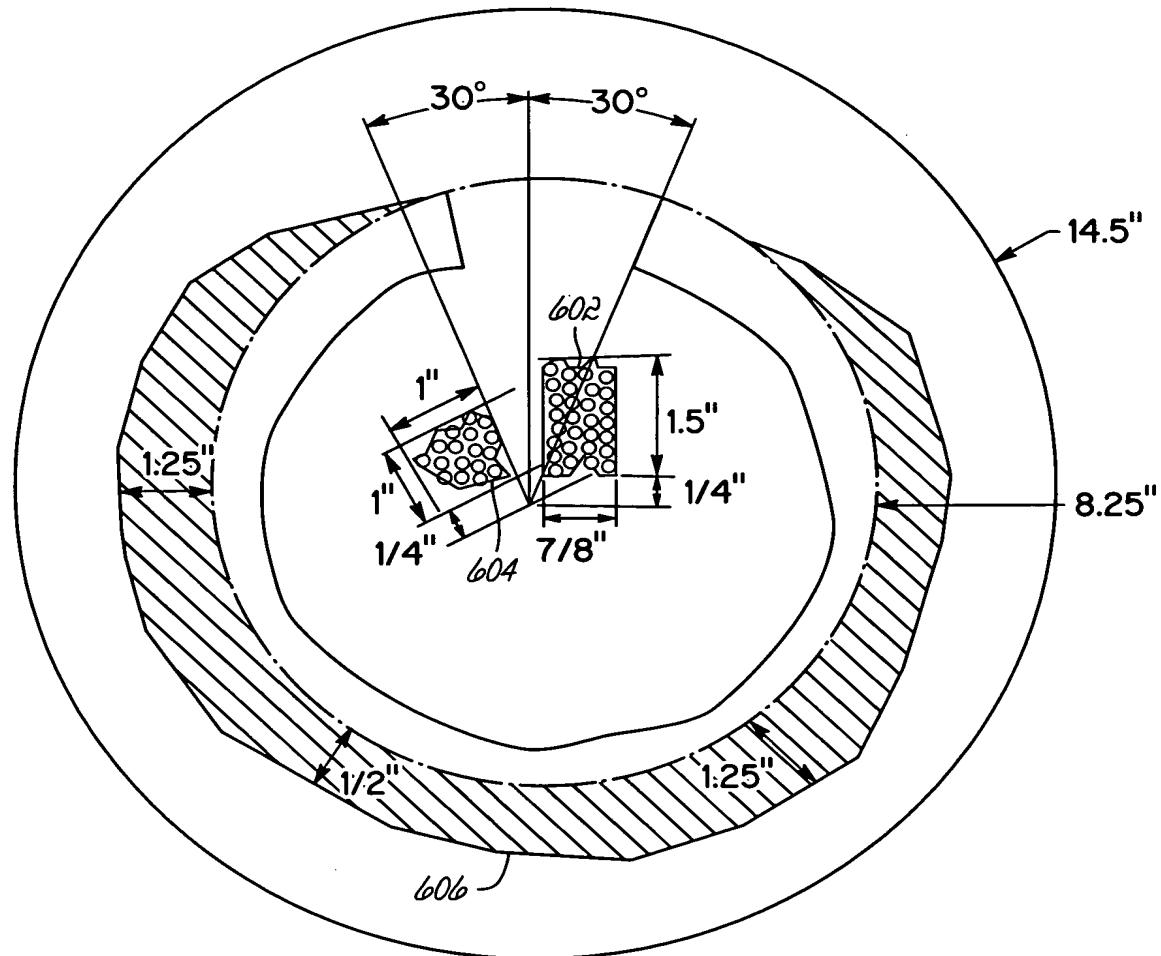


FIG. 10A

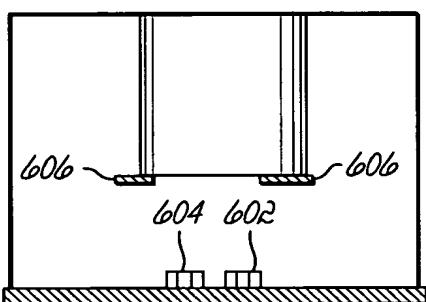


FIG. 10B

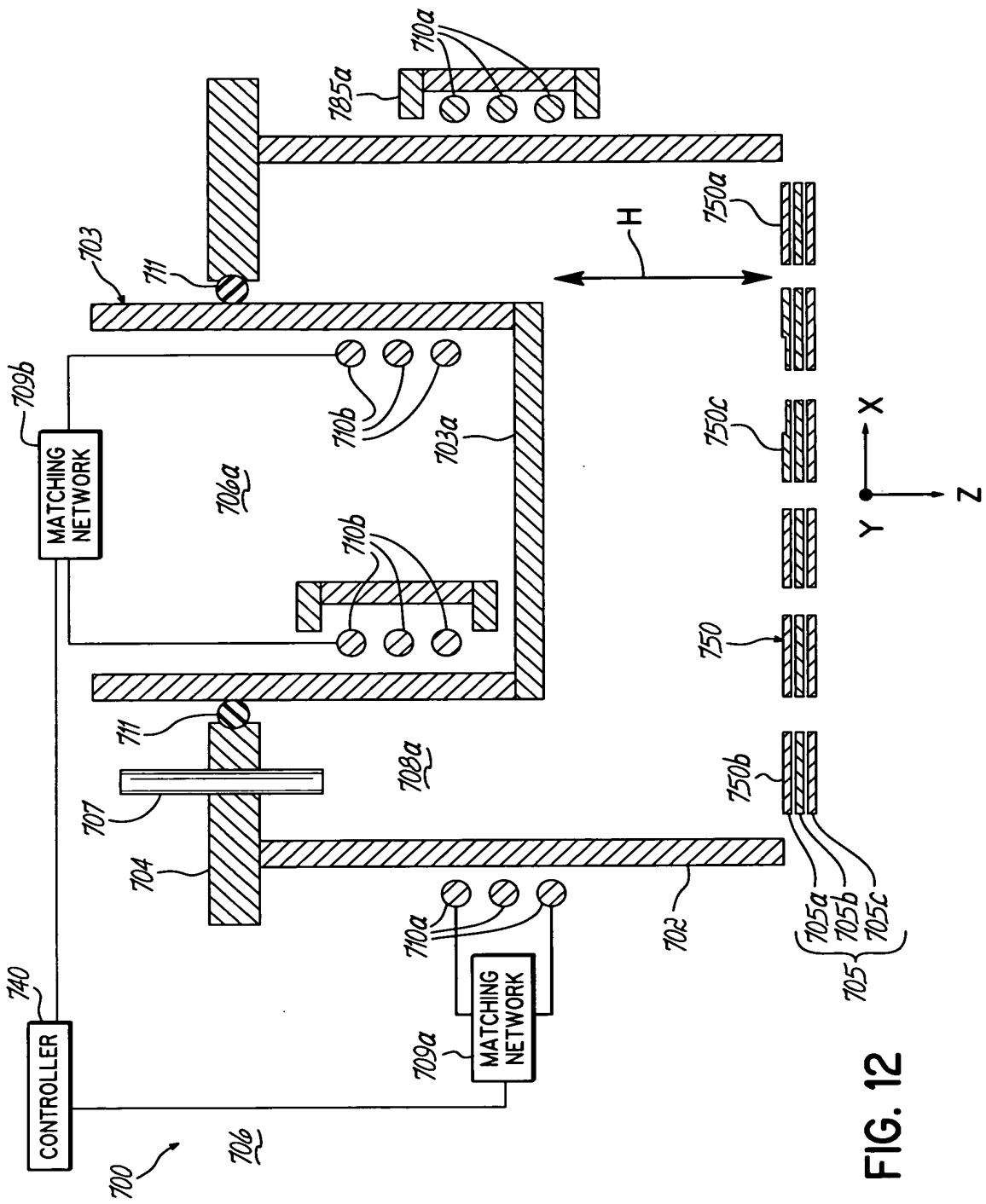


FIG. 12

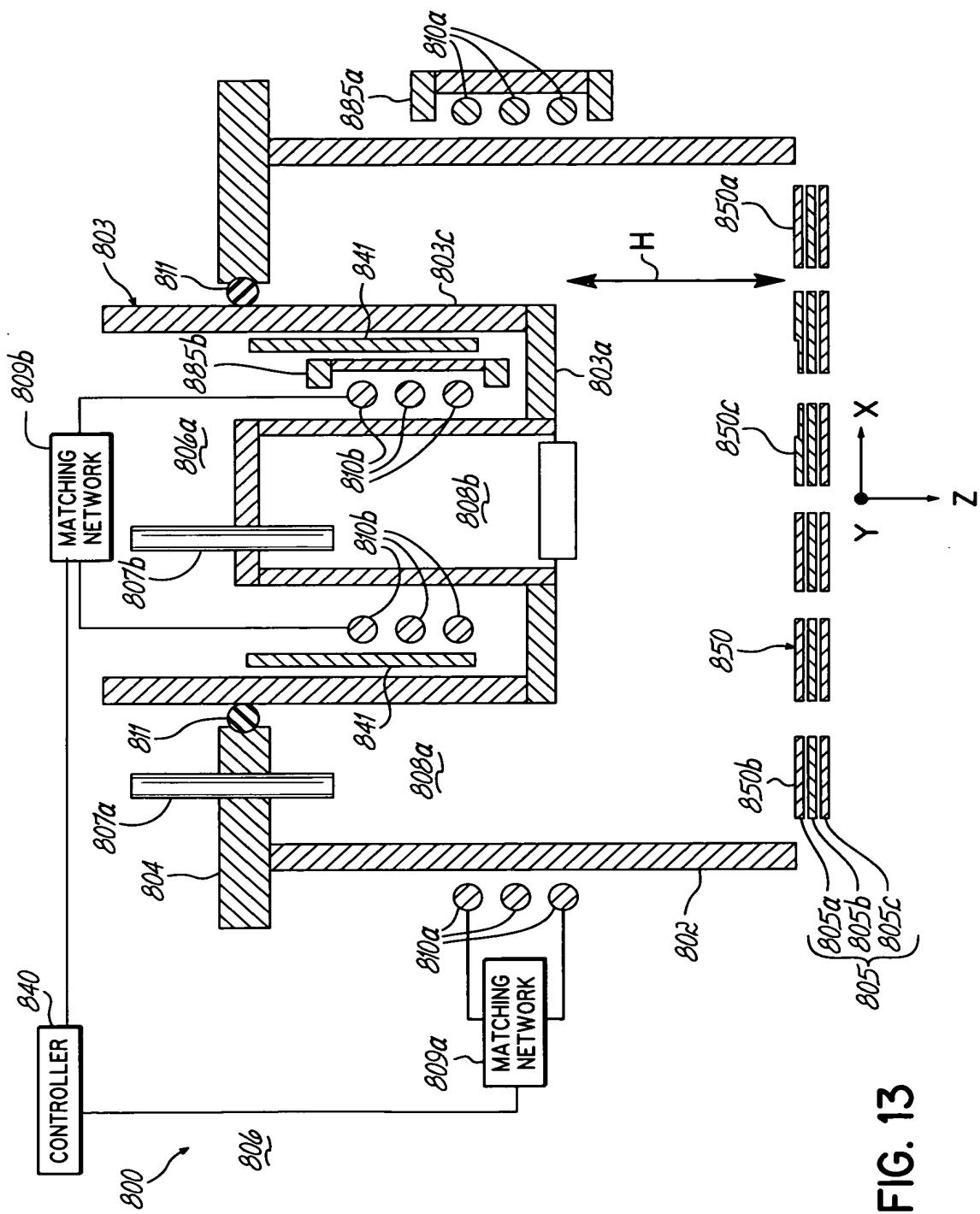


FIG. 13

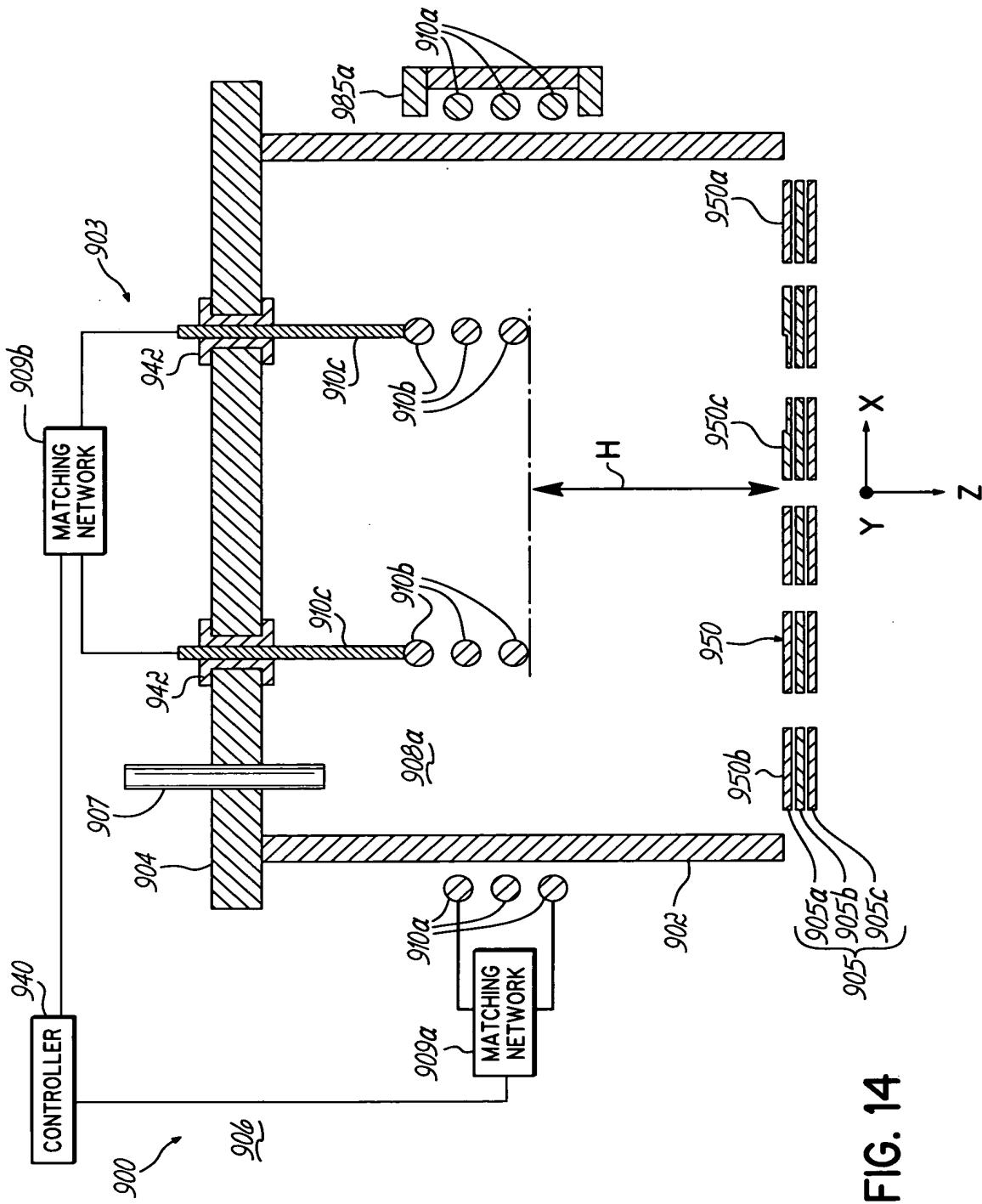


FIG. 14

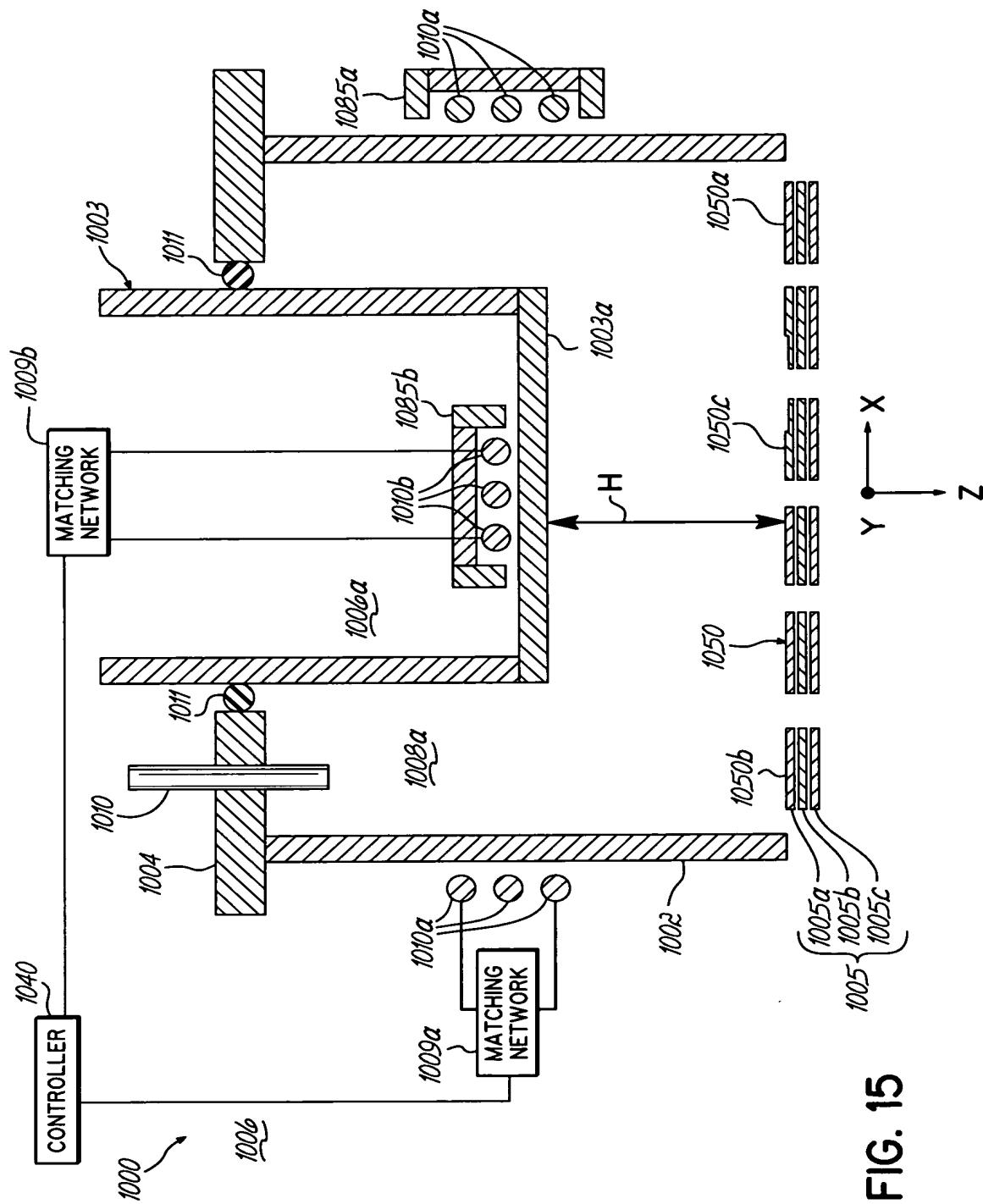


FIG. 15